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ABERRANT COLOR AND PATTERN IN A NORTHERN TWO-LINED SALAMANDER (*EURYCEA BISLINEATA*) FROM VIRGINIA -- Unusual color and pattern phenotypes have been reported occasionally for several species of salamanders in Virginia. These include, for example, an albinistic *Plethodon hubrichti* (Hayslett et al., 1998), leucistic *Ambystoma opacum* (Mitchell & Church, 2002) and *Desmognathus fuscus* (Mitchell, 2002), and a red translucent *Plethodon cinereus* (Mitchell et al., 2003). Reports such as these provide additional information on phenotypic and genetic variation in Virginia populations.

On 6 April 2005, I found an adult, gravid female *Eurycea bislineata* in a small rocky stream on Fort Belvoir, Fairfax County, Virginia that had an aberrant color and pattern phenotype. The exact location is not provided due to security restrictions. The stream was deeply cut through the wooded slope, and it and the surrounding trees (e.g., Red Cedar [*Juniperus virginiana*], Virginia Pine [*Pinus virginiana*]) suggested that this area was once an open agricultural field or pasture. Currently, the slope that drains into this small stream is forested with Tulip Tree (*Liriodendron tulipifera*), White Oak (*Quercus alba*), and Loblolly Pine (*Pinus taeda*). Industrial and military complexes occur in the watershed, as do urban roads. During two surveys in this stream I found only one other *E. bislineata*; it had the typical color and pattern. I also observed several adult and juvenile *Rana clamitans* and *Rana palustris*. One juvenile for each of these two species was found dead.

Normally colored *E. bislineata* adults have an orange-yellow to yellow-brown dorsum bordered on each side dorsolaterally with a narrow dark brown to black line, a yellowish head sometimes with black flecks, and immaculate yellow chin, venter, and undersides of all legs (Bishop, 1947; Conant & Collins, 1991; Petranka, 1998). The dorsolateral black stripes extend from behind the eyes to the distal portion of the tail. In some areas, the black lines on the tail may be broken into irregular spots (Martof et al., 1980). The midline of the yellow dorsal band has small, irregular black flecks in many individuals in Virginia (Mitchell, 2000). The sides are mottled yellowish-brown fading from darkest near the black dorsolateral lines to immaculate yellow near the venter (Bishop, 1947). The legs are yellowish-brown and may or may not have black flecking, especially on the rear legs.

The aberrant female (47 mm SVL, 29 mm partial tail length) lacked the dorsal yellow band and black stripes (Fig. 1). The dorsum of the head, neck, body, tail, and both pairs of limbs were largely dark brown. Except for the nearly uniform brown dorsum on the body, much of this pattern was mottled. The mottling in the lateral fields between the legs was black and formed irregular black spots or patches. The chin and venter of the neck, body, tail, and limbs were dull yellow in life, confirming its identity as an *E. bislineata* in this area.

Discussion of the etiology and significance of this aberrant color and pattern in the urbanized and degraded stream would only be speculation. We do not know if human-derived stressors have any direct or indirect effects on salamander phenotypes. However, reports of all such variants should be published in the event that the underlying cause of such color and patterns can be elucidated in the future.

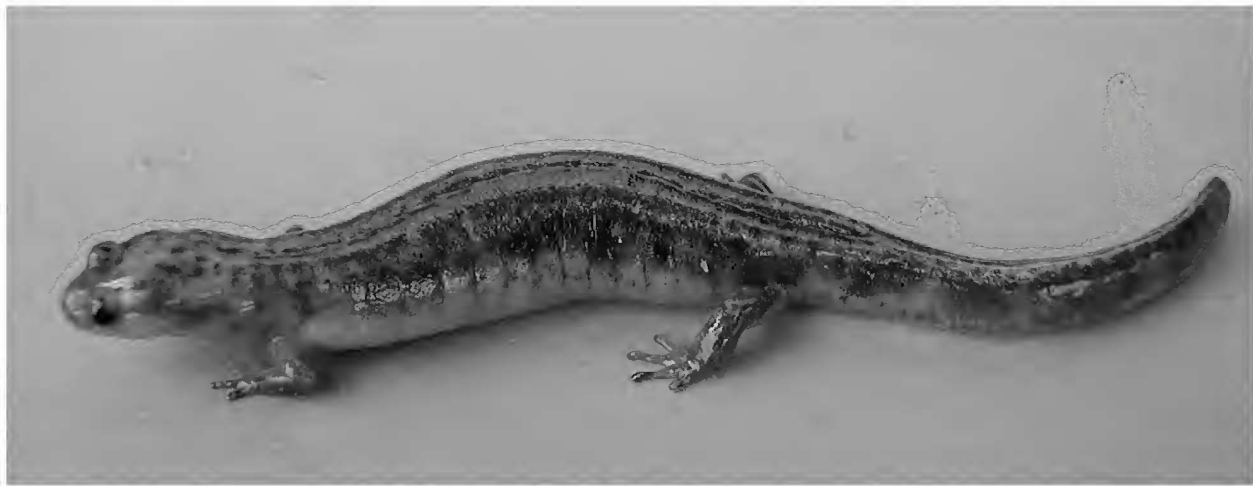


Fig. 1. Aberrant female *Eurycea bislineata* from Fairfax County, Virginia.

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© 2005 by the Virginia Natural History Society
- INVERTEBRATE PREDATION ON A MARBLED SALAMANDER (*AMBYSTOMA OPACUM*) LARVA IN VIRGINIA -- Predation by aquatic invertebrates and their larvae on amphibian larvae has been reported by many authors (e.g., Hinshaw & Sullivan, 1990; Mitchell, 1990; Rogers, 1996; Owen & Johnson, 1997; McCoy, 2003). Most reports describe spider or insect predation on tadpoles. Several papers describe the effects of the presence of diving beetle larvae on larval amphibian morphology, behavior, and community structure (Bosi, 2001; Laurila et al., 2001; Altwegg, 2003; Johnson et al., 2003). Anecdotal observations can be important because accumulation of such data may lead to a better understanding of the range of predators on different amphibian life history stages and their survival risks in different habitats. Predators and their prey may vary in different parts of the species' range. Invertebrate predation on salamander larvae has been reported, for example, for Spotted Salamander (*Ambystoma maculatum*) larvae in Connecticut (Kenny & Burne, 2000) and for a Red-backed Salamander (*Plethodon cinereus*) by a rove beetle in Maryland (Jung et al., 2000). In this note, we provide the first published report in Virginia on a Marbled Salamander larva depredated by a predaceous aquatic beetle larva.
- On 15 May 1998, we collected six near-metamorphic *Ambystoma opacum* larvae in a small pond on Fort A.P. Hill, 6.8 km SW Port Royal, Caroline County, Virginia (38° 08' 40.76" N, 77° 16' 7.52" W). All were large (50-56 mm total length, 0.87-1.24 g) and all but one had external gills. We initially found one of the gilled larvae (52 mm total length, 1.10 g) upside down in the water. Upon capture, we discovered a larva that was being eaten by a water tiger, the larval form of a predaceous diving beetle (*Cybister* or *Dytiscus*, Dytiscidae). We also caught 30 Spotted Salamander (*Ambystoma maculatum*) larvae, tadpoles of the Spring Peeper (*Pseudacris crucifer*) and Southern Leopard Frog (*Rana sphenoccephala utricularia*), and adult Red-spotted Newts (*Notophthalmus viridescens*) in the same pond. The two ranid tadpoles (72 mm and 89 mm total length) and the adult newts were likely too large for the water tiger, although the others were small enough to be captured by this predator. The *A. maculatum*, *A. opacum*, and *P. crucifer* larvae were at some level of risk of predation by this aquatic predator. We recommend that all observations of invertebrate predation of amphibians and reptiles in Virginia be described in detail, including identification of the predator.